REMARKS

Claims 5-16 and 18-22 remain pending in this patent application. Claims 5, 6, 9, 13, 14, 16, 19 and 20 have been amended. Support for the amendments to independent claims 5, 6, 9, 13, 14, 16 and 20 can be found in the specification at paragraph [0053] and in Figure 1. Paragraph [0053] reads:

> [0053] Although either of the first and second end surface protective films can be contact with the semiconductor layer, it is preferable that the second end surface protective film is in contact with the semiconductor layer. In this case, it is possible to suppress deterioration of the first end surface protective film.

Therefore, it is requested that the above amendments be entered and considered.

Previous Claim Rejections under 35 USC § 103(a) in Final Office Action

Claims 1, 2, 4, 5, 13-16, 18-20 were rejected under 35 U.S.C. 103(a) as being unpatentable over Tojo '473 (2004/0105473) in view of Kume '315 (2004/0213315) and Kozaki '676 (2002/0053676).

Claims 6-12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Tojo '473) in view of Kume '315, Kozaki '676 and Yoshida '565 (US 6,057,565).

These rejections are traversed based on the following reasons.

Significant Features of Present Invention

It is respectfully submitted that the previously presented claims were patentable over the above cited references, since all of these references lacked the "end surface protective film" recited in the previous claims. In order to still further distinguish the present claims from the cited references, the claims have been further amended to recite:

(1) the end surface protective films cover, not only the stripe-shaped waveguide region or an emission-side of the end surface of the resonance, but also both end surfaces of the nitride semiconductor substrate (shown as element 101 in preferred embodiments);

(2) each end surface protective film is made of multiple layers, i.e. it is composed of first and second end surface protective films; and

(3) the order of the first and second end surface protective film is specified, i.e. the second end surface protective film is sandwiched by the nitride semiconductor layer and the first end surface protective film.

It is respectfully submitted that all of the above cited references fail to disclose these features (1)-(3).

Additional Distinctions over Previously Cited References

In addition to the above distinctions, it is submitted that Tojo '473 fails to disclose a "luminescent radiation region" that converts a wavelength of stray light. Rather, Tojo '473 has an object to confine the stray light by a light emission side reflecting film **43**, as shown in Figure 1 thereof. This reflecting film **43** is not for selectively excluding the stray light from the main laser light based on its wavelength, but distinguishes such light based on the reflective index and film thickness. See paragraph [0015] of Tojo '473:

> [0015] With this configuration, the reflective index of the reflecting film against an emission wavelength of laser light is set to a value between the effective refractive index and a refractive index of the substrate, and accordingly, if the thickness of the reflecting film is adjusted such that the reflectance in a region, corresponding to an oscillation region of laser light, of the reflecting film becomes lower, the reflectance in a region, corresponding to the substrate, of the reflecting film becomes higher, with a result that stray light entering the semiconductor laser from the region, corresponding to the substrate, of the reflecting film can be reduced.

In other words, Tojo '473 fails to teach or suggest converting the wavelength of the stray light. Consequently a significant element is absent from Tojo '473 which fails to disclose or

suggest an end surface protective film for selectively reflecting stray light based on the converted wavelength.

Regarding Kume '315, the Final Office Action states at page 3, lines 8-11 that Kume '315 discloses an absorbing layer **15A** as shown its Figure 1, concluding, "[I]t is inherent that the absorbing layer will emit luminescent radiation after absorbing light from the active layer and the emitted radiation will be a longer wavelength than the wavelength of the emitted light." However, Kume '315 discloses the prevention of spontaneous light emission, which corresponds to luminous or optical noise, from a laser chip to the outside, and this object is achieved by absorption of spontaneous emission light with the absorbing layer **15A**, as noted in the following paragraphs:

> [0001] ....the present invention relates to a semiconductor laser device that can prevent spontaneous emission from leaking out of the device and also relates to an optical disk apparatus and optical integrated unit using such a device.
>
> [0014] In the first semiconductor laser device, the spontaneous emission that has been radiated from the active layer toward the substrate is absorbed into the spontaneous-emission-absorbing layer. That is to say, the spontaneous emission involved with the laser oscillation does not leak out of the device. Accordingly, optical noise, which adversely affects optical elements surrounding the. device, can be greatly reduced.
>
> [0015] In one embodiment of the present invention, the spontaneous-emission-absorbing layer may contain indium and be formed in contact with the first cladding layer. In such an embodiment, since the spontaneous-emission-absorbing layer contains indium, the energy gap of the spontaneous-emission-absorbing layer can be smaller than the energy of the spontaneous emission radiated from the nitride semiconductors. As a result, the spontaneous emission can be absorbed just as intended.

Therefore, Kume '315 fails to disclose or suggest conversion of the wavelength of spontaneous emission light by the absorbing layer **15A** such that significant patentable distinctions exist over this reference..

Both Tojo '473 and Kume '315 fail to disclose or suggest effectively utilizing stray light. Rather, these references either completely reflect it or absorb it, so as to ignore it or diminish it. Because these references fail to disclose any constructive use of stray light, there is no reasonable basis for a motivation to one skilled in the art, or any basis for a reasonable expectation of success, to employ any end surface protective film corresponding to the converted wavelength as in the present invention.

In contrast, the present invention employs an end surface protective film corresponding to the converted wavelength of the stray light. Also, the film converts the stray light into a different wavelength for output with excited luminous light by the luminescent radiation region (e.g. element **112**). Stated somewhat differently, the luminescent radiation region does play an important role in not absorbing the stray light, but converting the wavelength, which contrasts significantly with the absorbing layer **15A** of Kume '315 which prevents leakage of light to outside by absorbing the stray light with higher efficiency. Thus the luminescent radiation region of the present invention clearly does not correspond to the absorbing layer **15A** of Kume '315.

Further, the end surface protective film of the present invention specifically corresponds to the predetermined wavelength of converted stray light. It employs the specified wavelength to be reflected with higher precision. This also insures that excited light is reflected.

In addition, the absorbing layer **15A** of Kume '315 is provided to *completely* absorb spontaneous emission, such that there is no expectation of any leakage of light from the absorbing layer **15A**, let alone any wavelength conversion of such leaked light. Thus, even if a skilled person combined a laser diode according to Tojo '473 with the absorbing layer **15A** of Kume '315, the resulting device would absorb all leaked light consistent with the design of the absorbing layer **15A** of Kume '315, with no leakage of light. Even in the case that it is presumed a spontaneous emission is leaked from the absorbing layer **15A** of Kume '315, and it is presumed that the wavelength is shifted to a longer side, the reflecting film according to Tojo '473 which is

not intended for wavelength conversion of the spontaneous emission, could not reflect the converted light properly, such that it would leak outside the laser chip. This is because the device disclosed by Tojo '473 is not intended for the conversion of laser light at all, such that the reflecting film therein cannot correspond with one that converts wavelength.

Regarding Yoshida '565, it is noted that this reference states at col.14, lines 1-12 that:

> With respect to the device formed with these electrodes 721 and 722, the lower surface of the sapphire substrate 701 (i.e., the surface opposite to that on which the device is formed) is polished to obtain an device thickness less than 60 .mu.m. Further, lines are scribed on the lower surface of the substrate, and then cleaved into individual devices each having a size of about 500 .mu.m.times.1 mm. In this case, the laser emission surface is decided on the A-plane, that is, on (11-20) plane of the GaN based material. After that, it is preferable to form a multi-layer reflective film formed of SiO2 and TiO2 on the laser emission surface in order to improve the reflection factor on the laser emission surface. (emphasis added.)

That is, Yoshida '565 and the other references fail to disclose multiple layers, each of which corresponds to a different wavelength respectively, or disclose the specific order of each composed sub layer.

On the other hand, the present invention specifies that the second end surface protective film is sandwiched by the nitride semiconductor layer and the first end surface protective film, which achieves superior result of suppressing deterioration of the first end surface protective film. Note paragraph [0053] in the present specification.

Finally, it is submitted that Kozaki '676 is farther removed from the present invention that the other references specifically discussed above.

In view of the above, it is submitted that the present claims patentably define over the previously cited references, such that the above rejections cannot be maintained.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Frederick R. Handren, Reg. No.

32,874 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By _____

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